ELSEVIER

Volume 191, Numbers 1–2, January 1996

WEAR

Contents

Rolling contact fatigue

Rail rolling contact fatigue Research by the European Rail Research Institute 1
D.F. Cannon (Derby, UK), H. Pradier (Utrecht, Netherlands)

Numerical stress analysis of rail rolling contact fatigue cracks 14
S. Bogdański, M. Olzak, J. Stupnicki (Warsaw, Poland)

Residual stress and its consequences on both sides of the wheel–rail interface 25
O. Orringer (Cambridge MA, USA), W.R. Paxton, D.E. Gray (Washington DC, USA), P.K. Raj (Burlington MA, USA)

Rolling contact stress analysis with the application of a new plasticity model 35
Y. Jiang, H. Sehitoglu (Urbana, IL, USA)

A branch criterion for shallow angled rolling contact fatigue cracks in rails 45
S.L. Wong, P.E. Bold, M.W. Brown (Sheffield, UK), R.J. Allen (Derby, UK)

Rail rolling contact fatigue. The performance of naturally hard and head-hardened rails in track 54
H. Muster (Bern, Switzerland), H. Schmedders, K. Wick (Duisburg, Germany), H. Pradier (Utrecht, Netherlands)

Rolling contact fatigue, metallurgy and residual stresses

Experimental study on rolling contact fatigue from the aspect of residual stress 65
M. Ishida, N. Abe (Tokyo, Japan)

Contact vibration with high damping alloy 72
Y. Suda, H. Komine (Tokyo, Japan)

Reconstruction of residual stresses in railroad rails from measurements made on vertical and oblique slices 78
J. Magiera, J. Orkisz, W. Karmowski (Cracow, Poland)

New experimental approach for studying residual stresses in rails 90
Y. Wang, X. Shen, F.-P. Chiang (Stony Brook, NY, USA)

Development and application of an improved method for experimental determination of release fields in cut railroad car wheels 95
R. Czarnek (Johnstown, PA, USA)

Wheel–rail contact mechanics at full scale on the test stand 101
A. Matsumoto, Y. Sato (Tokyo, Japan), M. Nakata, M. Tanimoto (Osaka, Japan), K. Qi (Tokyo, Japan)

Improving railway operation: Application of contact mechanics

The transition from the wear to the stress regime 107
H.M. Tournay, J.M. Mulder (Braamfontein, South Africa)

A parametric study of the lubrication transport mechanism at the rail–wheel interface 113
G. Thelen, M. Lovette (Philadelphia, PA, USA)

Practical implementation of results of ORE–ERRI research on wheel–rail contact interaction on the European railways 121
I. Korpanec, H. Pradier (Utrecht, Netherlands)

Metallurgy and materials development

Contribution of railway dynamics codes to the understanding of the metallurgical behavior of the rail tread 126
P. Aknin, J.P. Pascal (Arcueil, France), J.P.J. Bettembourg (Amneville, France), B. Prasil (Paris, France)

Formation of white-etching layers on rail treads 133
G. Baumann, H.J. Fecht, S. Liebelt (Berlin, Germany)

Elsevier Science S.A.

Metallurgical investigation of transverse defects in worn rails in service 141
K. Sugino, H. Kageyama, T. Kuroki, C. Urashima (Kitakyushu, Japan), A. Kikuchi (Futtsu, Japan)

Corrugation and noise

Short wavelength rail corrugation: field trials and measuring technology 149
S.L. Grassie (Cambridge, UK)

An extended linear model for the prediction of short pitch corrugation 161
K. Hempelmann, K. Knothe (Berlin, Germany)

Problems and solutions

Tribological aspects of wheel–rail contact: a review of recent experimental research 170
P. Clayton (Portland, OR, USA)

Wheel–rail noise: impact, random, corrugation and tonal noise 184
J.J. Kalker, F. Périard (Delft, Netherlands)

Reconstruction of residual stresses in railroad vehicle wheels based on enhanced saw cut measurements, formulation and benchmark tests 188
J. Orkisz (Cracow, Poland), A. Skrzat (Rzeszow, Poland)

Cause, increase, diagnosis, countermeasures and elimination of Shinkansen shelling 199
K. Kondo, K. Yoroizaka, Y. Sato (Tokyo, Japan)

Effects of wheel–rail contact geometry on wheel set steering forces 204
S. Mace, R. Pena, N. Wilson (Pueblo, CO, USA), D. DiBrito (Silverthorne, CO, USA)

Adhesion, wear and lubrication

Tribological interrelationship of seasonal fluctuations of freight car wheel wear, contact fatigue shelling and composition brakeshoe consumption 210
J. Kalousek, E. Magel (Vancouver, Canada), J. Strasser, W.N. Caldwell, G. Kanevsky (Saint-Laurent, Quebec, Canada), B. Blevins (Montreal, Quebec, Canada)

Fundamental studies in wheel–rail contact problems

Elastic–plastic rolling–sliding contact on a quarter space 219
C.-C. Yu, L.M. Keer, B. Moran (Evanston, IL, USA)

Effect of overlapping wheel passages on residual stress in rail corners 226
T.N. Farris (West Lafayette, IN, USA)

Calculations of the frictional heating of a locomotive wheel attending rolling plus sliding 237
V. Gupta, G.T. Hahn, P.C. Bastias, C.A. Rubin (Nashville, TN, USA)

Corrugation, wear and wheel–rail contact problems

A fast non-steady state creep force model based on the simplified theory 242
Z. Shen, Z. Li (Chengdu Sichuan, P.R. China)

Measurement of railhead longitudinal profiles: a comparison of different techniques 245
S.L. Grassie (Cambridge, UK)

A case study of the effect of lubrication and profile grinding on low rail roll-over derailments at CSX transportation 252
D. Rippeth (Jacksonville, FL, USA), J. Kalousek (Vancouver, BC, Canada), J. Simmons (Minneapolis, MN, USA)

Shakedown limits in rolling–sliding point contacts on an anisotropic half-space 256
A. Kapoor (Leicester, UK), J.A. Williams (Cambridge, UK)

Energy and wear analysis in lubricated sliding contact 261
A. Alp, A. Erdemir (Argonne, IL, USA), S. Kumar (Chicago, IL, USA)

General discussion 265

Author Index of Volume 191 281

Subject Index of Volume 191 283

The publisher encourages the submission of articles in electronic form thus saving time and avoiding rekeying errors. A leaflet describing our requirements is available from the publisher upon request.